Space Weather Forecast

Issued on Friday, 26 January 2024 at 13:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Potential for CME (Coronal Mass Ejection) glancing blow arrivals today, with a slight chance of a Minor Geomagnetic storm. Chance of Moderate solar activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only Common-class flares, with the largest originating from a sunspot region in the southwest quadrant. There are currently four numbered sunspot regions on the visible disc, which are all located in the western hemisphere, with two moderately sized regions, one of which is potentially magnetically complex, although analysis of the region is becoming harder as it approaches the southwest limb The other moderately sized region was previously magnetically complex but has recently simplified a little. The remaining spot regions are small and simple, with a new and unnumbered sunspot which has recently emerged in the eastern hemisphere. There have been several CMEs emerge in the past 24 hours, although none of these appear to be Earth-directed.

Solar Wind / Geomagnetic Activity: Solar winds showed weak CME arrivals during Thursday afternoon. Wind speeds were mostly between 380 and 460 km/s. The strength of the solar winds magnetic field strength was predominantly weak, but temporarily increased through the afternoon to reach moderate levels. The important north-south component of the solar wind fluctuated weakly. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity has declined over the past few days, but is expected to be Low to Moderate with a chance of isolated Moderate flares and a slight chance of a Strong flare.

Solar Wind / Geomagnetic Activity: There is potential for the arrival of glancing blows from numerous CMEs during day 1 (26 Jan). Overall, geomagnetic activity is expected to be mostly Quiet to Unsettled, with the slight chance of Active to G1/Minor Storm interval should any CME arrive during Day 1 (26 Jan). Geomagnetic activity should then return to mostly Quiet on Days 2-3 (27-28 Jan) after any residual CME effects have waned. During day 4 (29 Jan) a coronal hole high speed stream is expected to arrive, and geomagnetic activity is expected to increase to Unsettled to Active levels, with a slight chance of a G1/Minor Storm.

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor radiation storms through the period due to the two complex regions on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	10	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	45	45	45	45
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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